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SOME WILLOWS OF BOREAL AMERICA.

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The genus *Salix*, as it occurs in the "Manual region" of the eastern United States and adjacent Canada, is well understood and its species within this range are comparatively few in number. Farther to the northeast, however, in the calcareous and magnesian districts bordering on the lower St. Lawrence and the cold northern half of the Gulf, i. e., the region embracing the Gaspé Peninsula, Anticosti, the Mingan Islands, western Newfoundland and southeastern Labrador, the genus is very largely developed and we are only beginning to realize the great number of peculiar species which characterize this area. Several of them,— *S. fuscescens* Anderss., *S. desertorum* Richardson, *S. calcicola* Fernald & Wiegand, *S. vestita* Pursh, and *S. reticularis* L.— are of wider northern range; but some others,— *S. obtusata* Fernald, *S. latiuscula* Anderss., *S. laurentiana* Fernald and *S. chlorolepis* Fernald — are apparently endemic to the region. These, however, represent only a minor portion of the willow-species of the area. Every season of active field-work adds to the number, and we now know from the district nearly forty species, twenty well-defined varieties, and numerous hybrids of *Salix*. When the vastness and diversity of the region is considered, together with the fact that only a few scattered localities have been visited by a botanist (and at many of these no willows have been collected), it is evident that scarcely more than a beginning has been made in bringing together from the region a representative collection of the willows. The species of certain sections of the genus still await detailed study, but in attempting to settle the identity of the species belonging in other sections it has been found necessary to

characterize some as new. Certain others, as yet known only from foliage-specimens, seem to be unique; but these are naturally reserved for further study when flowering or fruiting material has been secured.

Salix myrtillifolia Anderss. The complex of British American and Rocky Mountain shrubs passing as *S. novae-angliae* Anderss. or as *S. pseudo-myrsinites* Anderss. is at present inadequately represented in herbaria, but, if one may judge from the material now available, they all belong to one general specific type. It is hardly correct, however, to use for the species, as we have recently done, the name *S. pseudo-myrsinites* or, as was done a generation ago, the name *S. novae-angliae*. Andersson, who described numerous minor variants of this group, named and renamed the same shrubs in a perplexing fashion. The first publication of any distinctive names for these northern shrubs was by Andersson, who, in 1858 (Öfvers. af K. Vet.-Akad. Förh. Årg. 15. No. 3, pp. 129, 130) credited the Old World *S. myrsinites* with two American subspecies: *S. myrsinites*, 1. *S. pseudo-myrsinites* Andersson, "*Hab.* 'on the grand rapid of Sascatchavan, et in 'Rocky mountains';" and *S. myrsinites*, 2. *S. curtiflora* Andersson, "*Hab.* 'Fort Franklin, Mackenzieriver, *Richardson*';" while on a succeeding page (132) he published the closely related *S. myrtillifolia* as a fully ranking new species from "Rocky mountains, east side, low situations."

Of these three plants there is in the Gray Herbarium a cotype of *S. myrsinites*, 1. *S. pseudo-myrsinites*, labeled by Andersson himself and closely agreeing with the original description in having the conic-subulate capsules pedicelled (the mature pedicels nearly equaling or slightly exceeding the pale brown scales). This authentic material is well matched by fruiting specimens from the eastern watershed of the continent — such plants as Fernald & Wiegand's no. 3161 from Blanc Sablon, Labrador; material collected by Macoun on July 30, 1869, on Pic River, Ontario; and M. A. Barber's no. 281 from alt. 6000 ft., Banff, Alberta; but many of the foliage-specimens referred to *S. pseudo-myrsinites* and all the material so-called from west of the Rocky Mountain system seem to be different. Of the other two plants, *S. myrsinites*, 2. *S. curtiflora* and *S. myrtillifolia*, only unverified and inadequate material has been seen, although in the Gray Herbarium there is a fragmentary specimen collected by Richardson at Fort Franklin and seemingly a cotype of *S. myrsinites*, 2. *S. curtiflora*, but labeled by Andersson *S. myrtillifolia*.

In his later publications, his *Monographia Salicum* and his treatment

of the genus in De Candolle's *Prodromus*, Andersson threw all three together as one species distinct from *S. myrsinites* and rechristened *S. novae-angliae* "*Hab.* in America septentrionali ad fl. Saskatchavan, et in Montibus petrosis summis."[1] As treated in the *Monographia*, *S. novae-angliae* consisted of three subspecies: *S. novae-angliae*, 1. *S. pseudo-myrsinites*, based on the former *S. myrsinites*, 1. *S. pseudo-myrsinites*, and made in the *Monographia* to consist of three defined forms; *S. novae-angliae*, 2. *S. pseudo-cordata*, based on the earlier *S. myrsinites*, 2. *S. curtiflora*; and *S. novae-angliae*, 3. *S. myrtillifolia*, based upon the older species, *S. myrtillifolia*. In DeCandolle's *Prodromus*, however, with the title-page indicating publication earlier than the *Monographia* but containing exact page-citations of the latter work and consequently of presumably later date, *S. novae-angliae* (from "America boreali anglica,"[2] etc.) is kept up and the numbered subspecies of the Monograph are treated as varieties (designated, according to the instructions of the DeCandollean code, by Greek letters); *S. novae-angliae*, α, *pseudo-myrsinites*, β, *pseudo-cordata*, and γ, *myrtillifolia*.

All this, of course, is very perplexing, but it is evident that in his mature judgment Andersson considered all three shrubs as belonging to one North American species. The material which seems to belong in these three categories is certainly too difficult of separation, and after prolonged study the writer is satisfied to accept the conclusion of Andersson, and later of Bebb, that they are all one species. Furthermore, there can be no question that Bebb's further conclusion is correct, that for the species "S. myrtillifolia is the oldest (and best) name";[3] for *S. myrtillifolia* was published as a true species in 1858, six years before the publication of *S. novae-angliae*, while the name *S. pseudo-myrsinites*, though of binomial form, was published and intended by Andersson not as the name of a fully ranking species but of a subspecies, and later of a variety.

Throughout its range, from southern Labrador, northern Newfoundland and the Gaspé Peninsula to the northern Rocky Mountains, *S. myrtillifolia* is fairly constant in having the foliage green on both surfaces or merely a little paler beneath and in having the more or less pediceled capsules slenderly conic-subulate and subtended by brownish

[1] Anderss. Mon. Sal. 160 (1865?).
[2] Anderss. in DC. Prodr. xvi. pt. 2, 253 (1864).
[3] Bebb, Bot. Gaz. xv. 54 (1890).

or fuscous scales. On mossy knolls of the limestone tableland of Table Mountain on Port à Port Bay in western Newfoundland, a low shrub closely agreeing with *S. myrtillifolia* in foliage, aments, etc., departs from the general tendencies of the species in having the foliage conspicuously whitened beneath, the scales of the ament black, and the capsules sessile or subsessile and of a conic-ovoid outline. These characters would, at first sight, seem to constitute a good species, but in the series of specimens of *S. myrtillifolia* from across the continent one or another of these exceptional characters occasionally appears in otherwise good *S. myrtillifolia* and it is, therefore, most satisfactory to treat the Table Mountain shrub as a very extreme variety of a widely distributed species. It may be called

S. MYRTILLIFOLIA Anderss., var. **brachypoda**, n. var., frutex caespitosus trunco subterraneo prostrato usque 1 cm. diametro, ramis assurgentibus 1–3 dm. altis, cortice brunneo, ramulis puberulis; foliis oblongis vel obovato-oblongis obtusiusculis crebre crenatis 1–3.5 cm. longis 0.4–1.6 cm. latis utrinque glaberrimis planis supra viridibus lucidis reticulato-venosis subtus glauco-albescentibus exsiccatione nigrescentibus, petiolis 1–2 mm. longis; stipulis nullis; amentis fructiferis 1.5–2.5 cm. longis 0.8–1 cm. crassis foliis parvis 1–3 suffultis, pedunculo rhachique albo-villosis; squamis atris oblongis obtusis villosis vel glabratis 1–1.5 mm. longis; capsulis conico-ovoideis glabris fulvescentibus 4–6 mm. longis subsessilibus, stylo 0.5–1 mm. longo, stigmatibus brevibus divergentibus, nectario minuto.

Caespitose shrub with subterranean prostrate trunk up to 1 cm. in diameter; branches assurgent, 1–3 dm. high, with brown bark; the branchlets puberulent: leaves oblong or obovate-oblong, obtusish, closely crenate, 1–3.5 cm. long, 0.4–1.6 cm. wide, glabrous on both surfaces, flat, the upper surface green, shining and reticulate-veined, the lower glaucous-whitened, quickly blackening in drying, petioles 1–2 mm. long: stipules none: fruiting aments 1.5–2.5 cm. long, 0.8–1 cm. thick, subtended by 1–3 small leaves; peduncle and rhachis white-villous: scales black, oblong, obtuse, villous or glabrate, 1–1.5 mm. long: capsules conic-ovoid, glabrous, reddish-yellow, 4–6 mm. long, subsessile; style 0.5–1 mm. long; stigmas entire, divergent; nectary minute.— NEWFOUNDLAND: mossy knolls on the limestone tableland, altitude 200–300 m., Table Mountain, Port à Port Bay, July 17, 1914, *Fernald & St. John*, no. 10,822 (TYPE in Gray Herb.).

SALIX **cryptodonta**, n. sp., frutex 3–4 m. altus, ramis fuscis lucidis, ramulis tenuibus albido-tomentosis; foliis crassiusculis utrinque subrugosis oblongo-lanceolatis 3–5 cm. longis 1–2 cm. latis acuminatis basi rotundatis margine revolutis adpresse vel obscure crenatis,

dentibus glanduligeris, supra viridibus opacis plus minusve tomentulosis subtus cinereo-tomentosis, petiolis tomentosis 2–4 mm. longis; stipulis semi-ovatis vel lanceolatis glanduloso-serratis; amentis fructiferis pedunculatis crasse cylindricis 2–2.7 cm. longis 1.3–1.5 cm. crassis densifloris, pedunculo foliis instructo; squamis fulvis linearioblongis 3 mm. longis apice pilosis, pilis 1–1.5 mm. longis; capsulis conico-subulatis 8–10 mm. longis cinereo-tomentosis, stylo vix 1 mm. longo, stigmatibus bifidis divergentibus, pedicello nectarium multo superante quam squama vix breviori.

Shrub 3–4 m. high; branches fuscous, shining; branchlets slender, white-tomentose: leaves thickish, somewhat rugose on both sides, oblong-lanceolate, 3–5 cm. long, 1–2 cm. wide, acuminate, rounded at base; margin revolute, appressed-crenate, the teeth gland-tipped; upper surface green, opaque and more or less tomentulose; lower surface ashy-tomentose; petioles tomentose, 2–4 mm. long: stipules semi-ovate or lanceolate, glandular-serrate: fruiting aments peduncled: thick-cylindric, 2–2.7 cm. long, 1.3–1.5 cm. thick, densely flowered; the peduncle leafy: scales reddish-yellow, linear-oblong, 3 mm. long, the apex pilose with hairs 1–1.5 mm. long: capsules conic-subulate, 8–10 mm. long, ashy-tomentose; style barely 1 mm. long; stigmas bifid, divergent; pedicel much longer than the nectary and barely shorter than the scale.— NEWFOUNDLAND: by rapids below Seal Pond, Birchy Pond Stream, East Branch of the Humber, July 14, 1910, *Fernald & Wiegand*, no. 4264.

Nearest related, apparently, to *S. californica* Bebb, but with shorter aments, paler and narrower scales, longer capsules, much longer pedicels, and the more tomentose leaves with less numerous glandular teeth. Slightly suggesting *S. candida* Flügge but with more slender branches, more rugose and shorter leaves with looser and less whitened tomentum, gland-tipped teeth, longer pale scales, and longer capsules and pedicels.

SALIX **glaucophylloides**, n. sp., frutex mediocris vel altus vel arbor humilis usque 5 m. altus; ramulis glabris vel griseo-puberulis glabratisque, pilo rare persistente, cortice plus minusve castaneo; foliis oblongis vel lanceolatis, maturis subcoriaceis 3.5–12 cm. longis 1.5–6 cm. latis apice acutis vel subacutis basi cordatis vel rotundatis vel angustatis utrinque glaberrimis planis supra viridibus sublucidis subtus glauco-albescentibus exsiccatione nigrescentibus margine crebre crenatis vel crenato-serratis, serraturis glanduligeris, petiolis 3–12 mm. longis; stipulis semicordatis argute serratis plerumque persistentibus; amentis fructiferis 2–4 (–5) cm. longis 1–1.5 cm. crassis foliis parvis 3–5 suffultis; pedunculo rhachique albido-piloso, pilis minutis; squamis brunneis vel fuscis obovatis vel oblongis obtusis 1.5–2 mm. longis albido-pilosis, pilis 1.5–2.5 mm. longis; capsulis conico-subulatis rostratis glabris 4–7 mm. longis basi cordatis, stylo

tenue 1–1.5 mm. longo, stigmatibus adscendentibus brevibus bifidis, pedicello nectarium duplo–triplo superante quam squama breviori.

Medium-sized or large shrub or small tree up to 5 m. high; branches glabrous or grayish-puberulent and finally glabrate, the pubescence rarely persistent; cortex more or less castaneous: leaves oblong or lanceolate, the mature subcoriaceous, 3.5–12 cm. long, 1.5–6 cm. wide, acute or subacute, cordate, rounded or rarely narrowed at base; glabrous on both surfaces, plane, green and somewhat lustrous above, glaucous-whitened beneath, blackening in drying, the margin closely crenate or crenate-serrate with gland-tipped teeth; petioles 3–12 mm. long: stipules semi-cordate, coarsely serrate, usually persistent: fruiting aments 2–4 (–5) cm. long, 1–1.5 cm. thick, subtended by 3–5 small leaves: peduncle and rhachis white-pilose with minute hairs: scales brown or fuscous, obovate or oblong, obtuse, 1.5–2 mm. long, white-pilose with hairs 1.5–2.5 mm. long: capsules conic-subulate, beaked, glabrous, 4–7 mm. long, cordate at base; style slender, 1–1.5 mm. long; stigmas ascending, short, bifid; pedicel 2–3 times as long as the nectary and shorter than the scale.— Alluvial shores and calcareous slopes, Newfoundland, Quebec, New Brunswick and Maine. Newfoundland: banks of Humber River between Mt. Musgrave and Humber Mouth, July 15, 1910, *Fernald, Wiegand & Kittredge*, no. 3153; gravelly thickets along Harry's River, August 18, 1910, *Fernald & Wiegand*, nos. 3154 & 3155 (twigs pubescent), 3156 (mature leaves lanceolate, narrowed at base; leaves of sucker-shoots ovate-oblong, cordate); near the gypsum quarry at mouth of Romain's Brook, Bay St. George, August 15, 1910, *Fernald, Wiegand & Kittredge*, no. 3157 (trees); damp bushy ravines and brooksides in the limestone tableland, Table Mountain, Port à Port Bay, August 16, 1910, *Fernald, Wiegand & Kittredge*, nos. 3158, 3159, July 16 & 17, 1914, *Fernald & St. John*, nos. 10,819 (type in Gray Herb.), 10,820, 10,821. Quebec: gravel beaches near the mouth of Dartmouth River, August 26 & 27, 1904, *Collins, Fernald & Pease;* banks of the Grand River (Gaspé Co.), June 30–July 3, 1904 (several leaf-variants), *Fernald;* alluvial soil, mouth of Port Daniel River, July 30, 1902, *Williams & Fernald;* gravelly beaches and flats of Bonaventure River, July 5, 6 & 8, 1904, *Collins, Fernald & Pease;* Arbor Vitae swamp near mouth of Bonaventure River, July 31, 1902, *Williams & Fernald;* island at mouth of Little Cascapedia River, July 28, 1904, *A. S. Pease;* alluvium of Nouvelle River, July 19 & 20, 1904, *Collins & Fernald;* bank of Restigouche River, Matapedia, June 28, 1904, *Fernald;* banks of Matane River, August 5, 1904, *F. F. Forbes;* vicinity of Montmorenci Falls, August 7, 1902, *Williams & Fernald*, July 30, 1905, *J. Macoun*, no. 68,792. New Brunswick: beach of Aroostook River, Four Falls, August 14, 1901, *Fernald.* Maine: abundant on beach of St. John River, Fort Kent, June 16, 1898, *Fernald*, nos. 2471, 2472; beach of Aroostook River, Fort Fairfield, September, 1896, September 19, 1900, June 6, 1901, *Fernald.*

A very common riparian species in the calcareous districts from Aroostook County, Maine, and adjacent Quebec to Newfoundland, which has been mistaken at various times and in various states of development for *S. glaucophylla* Bebb and *S. Barclayi* Anderss. It is the northeastern shrub which was included in the 7th edition of Gray's Manual under *S. glaucophylla.* That species, which is apparently confined to the sands of the Great Lakes, is quite as variable as *S. glaucophylloides* in its foliage, but in *S. glaucophylla* this is very much heavier or thicker than in the more eastern shrub. In *S. glaucophylla,* furthermore, the fruiting aments are much larger, 5.5–8 cm. long, 1.8–2.5 cm. thick; the pubescence of the peduncle and rhachis longer and denser; the scales more copiously long-villous; the capsules longer, 8–10 mm. long, and obliquely rounded, not cordate, at base; and the pedicels distinctly exceeding the scales and many times longer than the nectaries.

Salix Barclayi, a species of extreme northwestern America, for which foliage-specimens of *S. glaucophylloides* have been mistaken, differs in its less toothed leaves, much longer scales (with the silky beard nearly equaling the capsules), the shorter pedicels, and the longer stigmas. The Newfoundland *S. latiuscula* Anderss., which has also been confused with *S. Barclayi,* has densely sericeous-tomentose capsules and remarkably long reflexed stigmas, much longer than in any other species known to the writer, and its foliage is not conspicuously glaucous beneath.

Salix **paraleuca,** n. sp., frutex 3–4 m. altus, ramis fuscis sublucidis, ramulis cinereo-pilosis glabratisque; foliis oblanceolatis vel oblanceolato-oblongis subcoriaceis planis juvenilibus rufo-pilosis, maturis glabris 3.5–7.5 cm. longis 1.3–2.2 cm. latis supra viridibus lucidis subtus glauco-albescentibus apice subacutis basi attenuatis margine crenato-dentatis, dentibus glanduligeris, petiolo griseo-piloso 4–6 mm. longo; stipulis nullis; amentis fructiferis breviter pedunculatis 2–2.5 cm. longis 7–8 mm. crassis, pedunculo 2–3 mm. longis 1–2 foliis instructis valde albido-pilosis, pilis 1–2 mm. longis; squamis oblongo-ovatis obtusis 2 mm. longis atris albido-pilosis, pilis 2–2.5 mm. longis; capsulis conico-cylindricis obtusis 3.5–4 mm. longis cinereo-tomentosis, stylo tenui 0.5 mm. longo, stigmatibus valde bifidis adscendentibus, pedicello 0.7 mm. longo nectarium duplo superante.

Shrub 3–4 m. high; branches fuscous, somewhat shining; branchlets ashy-pilose and glabrate: leaves oblanceolate or oblanceolate-oblong, subcoriaceous, flat, the young reddish-pilose, the mature glabrous, 3.5–7.5 cm. long, 1.3–2.2 cm. wide, green and shining above, glaucous-whitened beneath, subacute at apex, attenuate at base; the

margin crenate-dentate, with gland-tipped teeth; petiole ashy-pilose, 4–6 mm. long: stipules none: fruiting aments short-peduncled, 2–2.5 cm. long, 7–8 mm. thick; peduncle 2–3 mm. long, bearing 1 or 2 leaves, very white-pilose with hairs 1–2 mm. long: scales oblong-ovate, obtuse, 2 mm. long, black, white-pilose with hairs 2–2.5 mm. long: capsules conic-cylindric, obtuse, 3.5–4 mm. long, ashy-tomentose; style slender, 0.5 mm. long; stigmas strongly bifid, ascending; pedicel 0.7 mm. long, twice as long as the nectary.— Quebec: banks of the Grand River, Gaspé County, June 20–July 3, 1904, *Fernald* (type in Gray Herb.).

Nearest related, apparently, to the complex known as *S. phylicifolia* L.; but distinguished by the obviously crenate-dentate leaves with their very glaucous lower surfaces and their characteristic pubescence, as well as by the very short blunt capsules which, in form, suggest those of *S. sericea*, to which *S. paraleuca* has no close affinity.

Salix **stenocarpa**, n. sp., frutex altus, ramis castaneis lucidis ramulis pilosis glabratisque; foliis oblanceolatis planis, juvenilibus albido-villosis glabratis 4–10 cm. longis 1.5–3 cm. latis supra viridibus sublucidis ad nervum albido-pilosis subtus glauco-albidis apice acuminatis basi attenuatis vel rotundatis margine undulato-dentatis, dentibus glanduligeris, petiolo piloso 4–10 mm. longo; stipulis subreniformibus; amentis fructiferis pedunculatis laxis 2.5–3.5 cm. longis 8–10 mm. crassis, pedunculo 8–10 mm. longis 3–5 foliis parvis instructis breviter tomentosis; squamis anguste oblongis obtusis 2.5–3 mm. longis fulvis albido-pilosis, pilis circa 1 mm. longis; capsulis subulato-attenuatis 4–5 mm. longis albido-tomentosis, stylo vix 1 mm. longo, stigmatibus stylum aequantibus integris, pedicello vix 0.5 mm. longo nectarium paulo superante.

Tall shrub; the branches castaneous and shining; the branchlets pilose, finally glabrate: leaves oblanceolate, flat; the young white-villous, glabrate, 4–10 cm. long, 1.5–3 cm. wide, green and somewhat shining above, white-pilose along the midrib, glaucous-whitened beneath, apex acuminate, base narrowed or rounded, margin undulate-dentate with gland-tipped teeth; petiole pilose, 4–10 mm. long; stipules subreniform: fruiting aments peduncled, loose, 2.5–3.5 cm. long, 8–10 cm. thick; peduncle 8–10 mm. long, bearing 3–5 small leaves, short-tomentose: scales narrowly oblong, obtuse, 2.5–3 mm. long, yellow-brown, white-pilose with hairs about 1 mm. long: capsules subulate-attenuate, 4–5 mm. long, white-tomentose; style barely 1 mm. long; stigmas equaling the style, entire; pedicel barely 0.5 mm. long, a little longer than the nectary.— Quebec: ledgy banks of Restigouche River, Matapedia, June 28, 1904, *Fernald* (type in Gray Herb.).

Related to *S. paraleuca*, but differing in its more elongate shallowly toothed leaves, (when young with characteristic white pubescence), the

longer-peduncled and more slender aments, the longer yellowish scales, the more slender and pointed capsules and the entire stigmas. From *S. phylicifolia* distinguished by the pubescence of the much longer leaves, the shorter capsules, and the entire stigmas.

SALIX ROSTRATA Richardson, var. **capreifolia,** n. var., frutex altus vel arbor mediocris usque 4 m. altus, ramulis crassis dense canescento-tomentosis, tomento persistente; foliis ovatis vel late ellipticis vel obovatis subtus valde cinereo-tomentosis tomento persistente; amentis eis formae typicae similibus.

Tall shrub or small tree, up to 4 m. high; branchlets thick, densely canescent-tomentose, with persistent tomentum: leaves ovate, broadly elliptic or obovate, very cinereous-tomentose beneath with persistent tomentum: aments similar to those of the typical form of the species.—Newfoundland, eastern Quebec and Nova Scotia. NEWFOUNDLAND: Fogo Island, July 27, 1903, *J. D. Sornborger;* cool thicket, Western Bay, Conception Bay, August 21, 1914, *G. S. Torrey;* thicket, St. John's, August 1, 1911, *Fernald & Wiegand*, no. 5261; gravelly strand, Southeast Arm, Bonne Bay, August 31, 1910, *Fernald & Wiegand*, no. 3181; calcareous gravelly terrace, Port à Port, August 16, 1910, *Fernald & Wiegand*, no. 4259. QUEBEC: cold limestone cliffs, Percé, August 16 & 19, 1904, *Collins, Fernald & Pease;* calcareous sea-cliffs, Tourelle, August 19–21, 1905, *Collins & Fernald* (TYPE in Gray Herb.). NOVA SCOTIA: roadside, Pictou, July 13, 1914, *Fernald & St. John*, no. 11,023.

In typical *S. rostrata* Richardson (*S. Bebbiana* Sargent) the new branchlets are pubescent at tip, but the pubescence is early deciduous; and the leaves, varying from ovate-oblong to oblanceolate, lose much of their pubescence in age, becoming glabrate or only sparsely pubescent but obviously veiny beneath. In the common Rocky Mountain representative of the species, *S. rostrata,* var. **perrostrata,** n. comb.,= *S. perrostrata* Rydberg, Bull. N. Y. Bot. Gard. ii. 163 (1901), the leaves are less rugose or almost plane and glabrate in age, and the branchlets glabrous or quickly glabrate. And in the largest extreme of the species, var. *luxurians* Fernald, RHODORA, ix. 223 (1907), with the large capsules (9–12 mm. long) on pedicels 5–8.5 mm. long, the branchlets are as pubescent as in var. *capreifolia,* but the very large leaves are sparingly pubescent or glabrescent and as little rugose as in var. *perrostrata.* The var. *capreifolia* presents the most extreme development of pubescence in the species and may prove to be the same as *S. vagans,* 1. *S. rostrata,* forma *latifolia* Anderss., Mon. Sal. 88 (1865) described from Vancouver Island, while var. *perrostrata* shows the opposite tendency. In its foliage var. *capreifolia* so closely simulates

the European *S. caprea* that foliage-specimens of the two can be readily distinguished only by the more tomentose branchlets of the newly proposed variety.

Another very extreme variant, apparently of *S. rostrata,* is a large shrub or small tree of western Newfoundland, which is quite as pubescent as var. *capreifolia* but has remarkably slender and elongate fruiting aments, long scales and comparatively short pedicels. When better known this may prove to be a distinct species but for the present it is proposed as

S. ROSTRATA, var. **projecta,** n. var., frutex altus vel arbor mediocris; ramulis crassis dense canescento-tomentosis, tomento persistente; foliis elliptico-ovatis vel oblongis obtusis vel subacutis, junioribus utrinque dense tomentosis paulo glanduloso-serratis; amentis fructiferis 6–8 cm. longis 1–1.5 cm. crassis; squamis fulvis lineari-oblongis obtusis leviter pilosis 3–4 mm. longis; capsulis lanceolato-subulatis dense villosis 5–6 mm. longis, pedicellis dense villosis 2–3.5 mm. longis.

Tall shrub or small tree, with stout densely cinereous-tomentose branchlets; the tomentum persistent: leaves elliptic-ovate or oblong, obtuse or subacute, the young densely tomentose upon both surfaces, sparingly glandular-serrate: fruiting aments 6–8 cm. long, 1–1.5 cm. thick: scales light brown, linear-oblong, obtuse, slightly pilose, 3–4 mm. long: capsules lance-subulate, densely villous, 5–6 mm. long; pedicel densely villous, 2–3.5 mm. long.— NEWFOUNDLAND: woods, Wild Cove (south of Bay of Islands), June 11, 1896, *A. C. Waghorne* (TYPE in Gray Herb.).

Differing from all the described varieties of *S. rostrata* in the slender elongate ament, the long scales, the short capsules and the pedicels shorter than the scales; in *S. rostrata* and its described varieties the scales being 1–3 mm. long, the capsules 5–12 mm. long, and the mature pedicels 3–8 mm. long and very distinctly exceeding the scales.

SALIX **leiolepis,** n. sp., frutex depressus, trunco ramisque subterraneis repentibus, ramulis assurgentibus 3–10 cm. altis pallidis glabris apice foliiferis; foliis crassis elliptico-rotundatis 0.7–2 cm. longis 0.5–1.4 cm. latis supra viridibus glabris impresse nervosis subtus glauco-pallidis reticulato-venosis glabris vel juvenilibus sericeo-tomentosis glabratisque, margine integerrimis vel crenatis paulo revolutis, petiolis glabris 1–4 mm. longis; gemmis terminalibus olivaceis glabris anguste ellipsoideis obtusis 4–5 mm. longis 1.5–2.5 mm. crassis; amentis terminalibus breve pedunculatis, fructiferis densifloris ellipsoideis 5–11 mm. longis, pedunculis 1–2.5 mm. longis glabris; squamis olivaceis vel fulvescentibus rotundato-obovatis glabris 1 mm. longis; capsulis subsessilibus conico-ovoideis obtusis 3.5–4.5 mm. longis glabris purpurascentibus, stylo brevissimo stigmatibus divergentibus bifidis, nectarii laciniis 2 filiformibus 1 mm. longis.

Depressed shrub with subterranean repent trunk and branches; the assurgent branchlets 3–10 cm. high, pale, glabrous, leafy at the tip: leaves thick, elliptic-rotund, 0.7–2 cm. long, 0.5–1.4 cm. wide, green and glabrous above, with impressed nerves, glaucous-whitened beneath and reticulate-veiny and glabrous, or the young silky-tomentose and glabrate; the margin entire or crenate, somewhat revolute; petioles glabrous 1–4 mm. long: terminal buds olive, glabrous, narrowly ellipsoid, obtuse, 4–5 mm. long, 1.5–2.5 mm. thick: aments terminal, short-peduncled; the fruiting densely flowered, ellipsoid, 5–11 mm. long; the peduncle 1–2.5 mm. long, glabrous: scales olive or somewhat reddish-yellow, rounded-obovate, glabrous, 1 mm. long: capsules subsessile, conic-ovoid, obtuse, 3.5–4.5 mm. long, glabrous, purplish; style very short, the divergent stigmas 2-cleft; the prongs of the nectary 2, filiform, 1 mm. long.— NEWFOUNDLAND: mossy knolls on the limestone tableland, altitude 200–300 m., Table Mountain, Port à Port Bay, July 17, 1914, *Fernald & St. John*, no. 10,825 (TYPE in Gray Herb.).

In habit and foliage closely simulating *S. reticularis* L. and the most dwarfed alpine extreme of *S. vestita* Pursh; but differing from both in the glabrous scales and capsules; also from *S. reticularis* in its short peduncles and thick fruiting aments, and from *S. vestita*, which is the most abundant willow of Table Mountain, in its glabrous or quickly glabrate foliage and the smaller and more slender glabrous greenish terminal buds, the terminal buds of *S. vestita* being obovoid, pubescent and reddish and measuring 6–11 mm. long by 3–5 mm. thick.

GRAY HERBARIUM.

FORMS OF ARENARIA LATERIFLORA.

R. W. WOODWARD.

IN a former article (RHODORA, **15**: 209) the writer called attention to two forms of *Arenaria lateriflora* occurring in Southern New England, a large-flowered form with long filaments and well developed anther-cells, and a second form having shorter petals and imperfectly developed anther-cells borne on very short filaments. Further observations the past summer indicate that the anther-cells of the second form are destitute of pollen. The two forms may be characterized as follows.

Petals averaging 7.5 mm. in length: filaments about twice the length